NAVAL RESERVE TELECOMMUNICATION PROGRAM: ADEQUACY AND EMPLOYMENT

Ronald William Hull

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NAVAL RESERVE TELECOMMUNICATION PROGRAM:
ADEQUACY AND EMPLOYMENT

By

Ronald William Hull

March 1976

Thesis Advisor: P. M. Carrick

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Naval Reserve Telecommunication Program: Adequacy and Employment

by

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Submitted in partial fulfillment of the
requirements for the degree of

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ABSTRACT

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LIST OF ABBREVIATIONS

ACTDUTRA	-	Active Duty for Training
BCT	-	Base Consolidated Telecommunication Activities
CHNAVRES	-	Chief of Naval Reserve
CINCLANTFLT	-	Commander-in-Chief Atlantic Fleet
CINCPACFLT	-	Commander-in-Chief Pacific Fleet
CINCUSNAVEUR	-	Commander-in-Chief, United States Navy, Europe
CNO	-	Chief of Naval Operations
COMMSTA	-	Communication Station
COMNAVAIRRES	-	Commander Naval Air Reserve
COMNAVSURFRES	-	Commander Naval Surface Reserve
COMNAVTELCOM	-	Commander Naval Telecommunication Commander
DCS	-	Defense Communication System
I/O	-	Input/Output
LDMX	-	Local Digital Message Exchange
MARS	-	Military Affiliate Radio System
M-MARP	-	Mobilization-Manpower Allocation Requirements Plans
NAVCOMPARS	-	Naval Communications Processing and Retrieval System
NAVTELCOM	-	Naval Telecommunication Command
NAVRESCEN	-	Naval Reserve Center
OP94	-	Reserve Telecommunication Senior Sponsor Representative
OPNAV	-	Chief of Naval Operations Staff

OUTUS	-	Outside Continental United States
REDICOM	-	Readiness Command
SOT	-	Ship Operation Trainer
WAT	-	Weekend Away Training

I. NAVAL RESERVE IN THE TOTAL FORCE

A form of the Naval Reserve as we know it today had its origins in the Sixty-Fourth Congress of the United States. It was in that Congress in the Year 1916 that a Naval Reserve Force Act was passed; the implied intent seemed to be one of creating a viable force which would complement the Navy in time of need. It read in part:

> There is hereby established, under the Department of the Navy, a Naval Reserve Force, to consist of six classes, designated as follows; and as hereinafter described:
>
> First, the Naval Fleet Reserve
> Second, the Naval Reserve
> Third, the Naval Coast Defense Reserve
> Fourth, the Naval Auxiliary Reserve
> Fifth, the Volunteer Naval Reserve
> Sixth, the Naval Reserve Flying Corps
>
> Members of the Naval Reserve Force may be ordered into active service in the Navy by the President in time of war or when in his opinion a national emergency exists. [1]

Within this charter lay the seeds of problems which would mature with the newborn service and continue to plague it throughout its existence. The first problem, and possibly the more serious, was the very complicated organizational structure it had established; the second was its direct relationship to the Department of the Navy and not the Navy itself. As a result of lessons learned during service in World War I, the Reserve and Congress acted, in 1925, to reorganize the Naval Reserve and eliminated some of the inherent problems [2]. The introduction of the Naval Reserve Act reads:

> That the Naval Reserve Force established under the Act of August 29, 1916, is hereby abolished, and in lieu thereof there is hereby created and established, as a component of the United States Navy, a Naval Reserve which shall consist of three classes, namely: The Fleet Naval Reserve, Volunteer Naval Reserve, and the Merchant Marine Naval Reserve [3].

Thus, the Congress acted to both streamline the organizational structure of the Naval Reserve Force and emphasize its intent that the Naval Reserve was to be a component part of the United States Navy. A review of Congressional actions from that time to the present would seem to indicate that this message did not meet with the acceptance that was intended. The concept of the Reserve as a component of the "Total Force" had to be backed by law in 1938 [4]. And again in 1952, it was written into law that "The bureaus and offices of the Navy were to hold the same relation and responsibility to the Naval Reserve as they did to the regular establishment. There shall be no discrimination between and among members of the regular and reserve components." [5]

The problem which has been nurtured with the very character of the Reserve Force seemed to have no solution. This may be due in no small part to its own mismanagement and the lack of command attention by those to whom Congress had entrusted its development.

In 1946, Secretary of the Navy James Forrestal, believing the Naval Reserve to be a vital part of the Navy, tried to establish the principle of integrated management. The Reserve was to be supported by and to function with the Active Navy as a single entity. The Naval Reserve was not to be a

separate force commanded and administered unto itself, but a force to be directly involved with the active operating forces under the command of the Chief of Naval Operations. His attempt to institute this concept had questionable success. As recently as 1972, a Naval Reserve management study sponsored by OPNAV cited the following problems as contributing to "a Naval Reserve lacking direction, visibility and resources to be a viable and dynamic component of the Total Force": [6]

1. The responsibility for general overall Reserve Program coordination was not defined.

2. There was no established policy concerning where Reserve Program sponsorship should be placed.

3. Reserve representation in the conduct of the Naval Reserve business was not provided; in many cases, the unique nature of Reserve management and program support was not understood.

Thus, the Naval Reserve became its own worst enemy. Even with more support from the Navy, the Reserve could not function at an efficient level for long; but until recently, support from the Navy did not come. Support was not offered for many of the reasons discussed previously, management, mistrust, ignorance; but the primary reason for this lack of acceptance of the Reserve Force as a component of the Total Force is best stated as follows:

> A sharpening of competition between Regular and Reserve was reflected by a key Pentagon official in testimony presented to the Senate Armed Services Committee, in which he identified as one of the major constraints to the development of a

> visible and credible Reserve Force 'ingrained attitudes - the 'we versus they' approach - the delineation of responsibility for Guard/Reserve problems' - the view that any move to upgrade Reserves would downgrade Active Forces. [7]

It appeared that the time had come again to reevaluate the role of the Naval Reserve within the Total Force structure: To redefine its mission, restructure the organization and instill new purpose within its personnel.

II. RESTRUCTURING THE NAVAL RESERVE

This nation's concept of a Total Force which has been with the Reserve programs, Army, Navy, and Air Force, since they began has become by necessity a national policy, policy which is dictated by the termination of the draft, attitudes of the population and sheer monetary constraints. The impetus for this implementation of policy came shortly after President Johnson's decision in 1965 to use draftees for expansion of the war in Vietnam vice mobilization of the Reserve Forces to augment the active duty effort [8]. The Administration and Congress came under increasing pressure to base the nation's primary defensive readiness on a Total Force of active and Reserves. Because of the difficulties encountered in the past in implementing such a concept, a thorough examination of the organizational structure of the Reserve Program was undertaken. The mission of the Naval Reserve is:

> To provide trained, ready and available reserve units for employment in the Active Forces as may be directed by CNO in order to increase capability of active forces upon outbreak of hostilities and declaration of an emergency or otherwise authorized by law. [9]

To accomplish this the Reserve has been organized in many different forms over its years of existence. Up until very recently the Reserve consisted of two separate forces - the Surface Reserve and the Air Reserve, each having its own commander. Neither of the two commanders reported directly

to CNO but to the Deputy Chief of Naval Operations (Manpower and the Naval Reserve). Neither was a major claimant in the budget process. Because of the problems encountered in the past the two Reserve Forces were reorganized into one under a Chief of Naval Reserve reporting directly to CNO. Under this arrangement the Reserve Forces became, for the first time in its history, a major claimant capable of major budget leverage. (See Figures 1 and 2.)

Within what has been formerly the Surface Reserve, a common thread can be found which remained with it during the many reorganizations occurring in its lifetime and that was the firm insistence on mobilizing the individual rather than a unit. This was contrary to the way it generally was done in other services and, in fact, contrary to the spirit of the Reserve mission to "provide trained, ready and available units ..." [10] The argument usually put forth in justifying its insistence on individual mobilization vice unit mobilization centered on the premise that due to the large mix of different rates required to supplement a given active duty unit, there was no assurance that these required rates could be located in a given geographical area to train and mobilize as a single unit. This fact, notwithstanding the pressure to reorganize and streamline the structure of the Naval Reserve, became paramount and, in 1973, the Naval Reserve was restructured to conform to its mission under the Total Force policy [11].

The plan for restructuring followed the following basic guidelines:

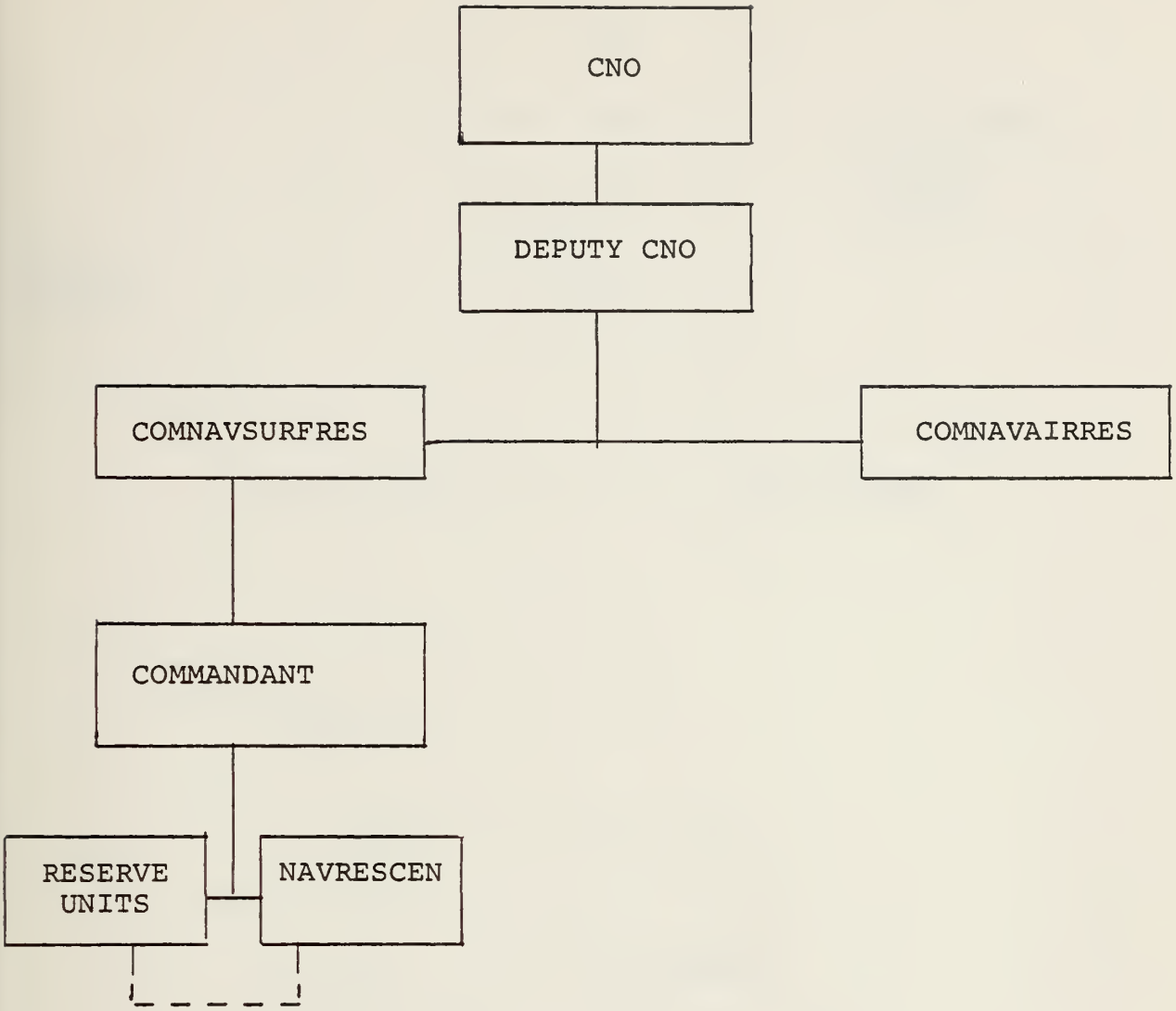


Figure 1. NAVAL RESERVE PRIOR TO RESTRUCTURING.

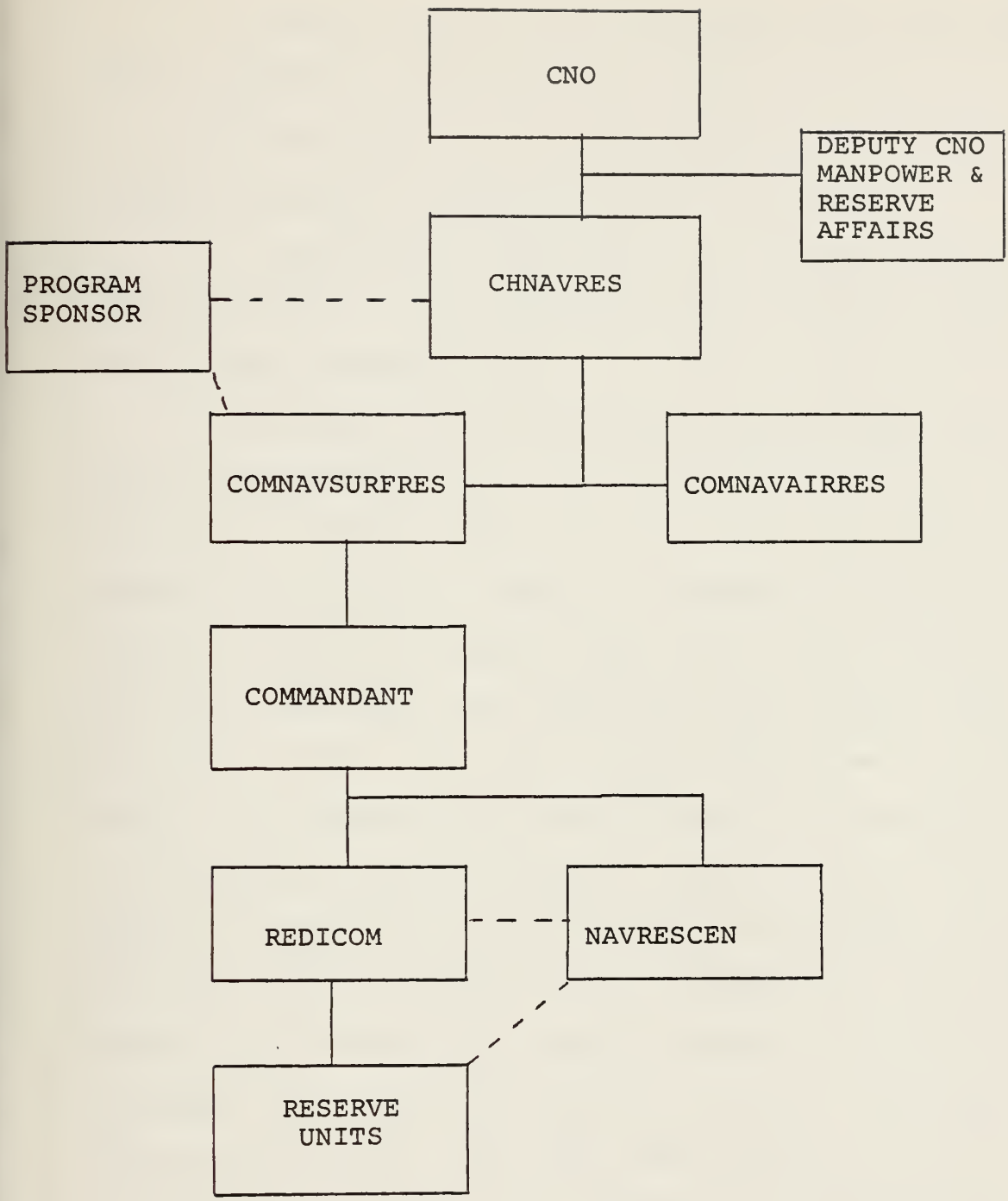


Figure 2. RESTRUCTURED NAVAL RESERVE.

1. Develop a basic policy to define the role of the reserve component in the Navy Total Force.

2. Refine the structure and rationalize the size of the reserve component in accordance with this policy.

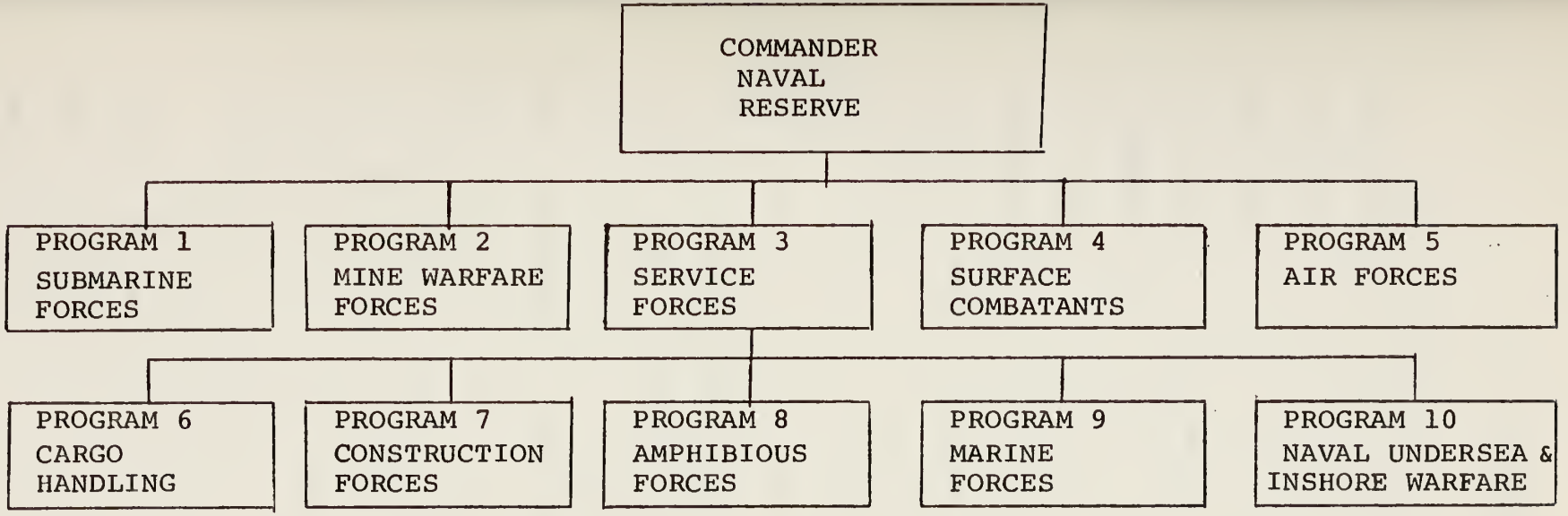
3. Correlate and update all of the Navy's mobilization plans to optimize the Total Force contribution in execution of national strategy.

On 25 October 1974, the Chief of Naval Operations promulgated new, somewhat surprising but realistic policy [11]. It stated, in essence, that the size of the Total Force and the Reserves' contribution thereto is determined purely on the number of minimally capable ships and aircraft in service or reserve at the time plus sufficient base support organizations to support them. Thus, the restructuring aimed to organize small, easily mobilized units at Reserve Centers around the country which were designated to support specific active duty assets. The initial step to accomplish this was relatively easy and that was to identify and assign those selective Reserve units which would support Reserve units with organic equipment and those which would, as a unit, complement active ships and aircraft. The final step was more difficult and is an ongoing one. This was to identify the augmentation requirements for the shore establishment.

> This is a formidable task, since the size of the shore establishment has an imprecise relation to: the size of the force being supported, the locale and duration of a conflict, the time phasing of the buildup to support the engaged forces, the realistic absorption rate of existing and reactivated facilities, and many other factors. [12]

The restructuring was implemented in June 1974. It was shortly thereafter that planners commenced work on how to accomplish it. Briefly, the mobilization requirements were grouped by operational command and from there to specific units. The unit requirements and their attendant billets were then assigned to Naval Reserve Centers around the country on the basis of a demographic survey. Individual reservists would be picked from local assets to fill the various billets within the units assigned to a particular Reserve Center. The training of that unit would then be geared to increasing the readiness of the individuals to perform as an integral part of that type command to which the unit was assigned to be mobilized. The Reserve structure was ultimately broken into ten major programs and one additional program which contains 20 sub-programs. (See Figure 3.)

One sub-program of Program 11 is the telecommunication program which was established to directly augment Commander, Naval Telecommunication Command, in support of his mission.



PROGRAM 11
SPECIAL AND
GENERAL SUPPORT
SUB-PROGRAMS

A. MILITARY SEALIFT
B. NAC CONTROL OF SHIPPING
C. RESEARCH
D. TRAINING
E. NAVAL MATERIEL COMMAND
F. AIR SYSTEMS COMMAND
G. FACILITIES ENGINEERING COMMAND
H. NAVAL TELECOMMUNICATION COMMAND
I. SECURITY MILITARY INFORMATION
J. MAJOR FLEET/FORCE COMMANDS
K. PERSONNEL SYSTEMS
M. NAVAL WEATHER SERVICE
N. SECURITY GROUP
O. BASE/STATION SUPPORT
P. OCEANOGRAPHIC
Q. JOINT SHORE COMMAND
R. SUPPLY SYSTEMS COMMAND
S. IRU
T. IRR

Figure 3. PROGRAMS & SUB-PROGRAMS OF THE NAVAL RESERVE

III. RESTRUCTURING PROBLEMS

With the background on the nature and extent of the Naval Reserves' part in the Total Force concept, there is immediately two areas of concern to consider in the newly restructured force. The first concerns whether, in fact, the mobilization requirements as stated by the various operational commanders are valid. Many of the stated requirements could be based on criteria that have long since changed through the introduction of new technology or a change in a command's mission; these requirements may be over or understated. Furthermore, and more importantly, they may be incorrect insofar as adequately describing the quality of the requirement. By this, it is meant that the requirement may take a more or possibly less highly trained individual to accomplish the stated task. Assuming these requirements can be identified and corrected as necessary, a more serious problem remains: Can the Reserve supply these individuals in the proper number and quality by rate and rating as the requirement is stated? If the call for even a partial mobilization were made, could the Naval Reserve fulfill its mission to "provide trained units ... for active duty in the Armed Forces in time of war or national emergency ..." [10]

The second area of concern is one of training and the state of readiness of the individual reservist to accomplish his assigned tasks. As noted before, the Reserve Program emphasized the individual rather than the unit. The individual

reservist was encouraged to better himself and his position in the Naval Reserve through promotion to higher levels. His professional development was limited to study from correspondence courses and other aids as they were available. For most rates, on-the-job training and exposure to new systems, technology and procedures was limited to the two weeks spent on Active Duty for Training (ACDUTRA). Even then, the tendency was to employ the individual at his present level of competency rather than taking the time to introduce him to new innovations. All too often his level of professional competency is that which he had when he was separated from active duty even though he may have reached a higher promotional status in the Reserve; this can be very frustrating for a sincerely motivated individual.

> Since ACDUTRA is supposed to be a key factor in maintaining mobilization readiness and an influential component of the individual reservist's training program, it is disturbing to see it perceived by so many with indifference or dissatisfaction. This suggests that ACDUTRA, as presently established and conducted, may be counterproductive for many reservists. [13]

The situation then arises, of what use is this individual in the event of mobilization? During the confused and hectic days after a recall, little time would be spared to familiarize and train Reserve personnel [9]. These are questions which need to be answered for the broad spectrum of the Naval Reserve. For purposes of this discussion, the question will only address the telecommunication program and the effect on its personnel.

Each of the reserve program's personnel allowance is predicated on the mobilization requirements of the active force, on a near one-to-one basis. Therefore, each active component has a vested interest in maintaining its reserve counterpart to augment it during mobilization, in respect to both numbers and mission readiness. The individual reserve programs can provide this only through maintenance of a viable training program. In all too many cases, this is not possible; there is no viable means to engage an individual in meaningful training and, as a consequence, his motivation to remain in the program is reduced. Thus, the individuals required by the active commands for mobilization may not be available.

This should be a very real and large concern of the operational commander, for it is with these reservists that he will have to accomplish his expanded mission in time of crisis or national emergency. With this consideration the operational commands must give serious thought to monitoring the readiness of the individuals and units that will serve under them: It should be a part of command responsibility to advise on and possibly even direct the reserve training program that relates to their individual missions.

This is the situation as it exists within the Telecommunication Program. As the program now stands, the requisite number of individuals are available* but the amount and

---

*As of November 1975, average manning of units was at 85% of authorized strength.

quality of training is being hampered by lack of equipment and funds. The training can be provided; the cost of this training will be a function of how soon an individual is to perform as an efficient member of an active duty command. Thus, the program sponsor must have a direct input into the readiness requirements and the inspection of the attainment of those requirements since it directly relates to the operational readiness of his command.

IV. TELECOMMUNICATIONS PROGRAM

> The mission of the Telecommunication Reserve Program is to provide mission capable, task performing units available for immediate mobilization in the event of war, national emergency, or otherwise authorized by law necessary to meet the most crucial needs at telecommunications activities specified herein, or as otherwise dictated by contingency. [14]

To accomplish this stated mission, the Telecommunications Program was established as a sub-program of the Support and General Program, Program 11. It was placed under the sponsorship of the Commander, Naval Telecommunications Command, and his representative, OP941CR. The program itself is in the direct chain of command from Chief of Naval Reserve, Naval District Commandants and Readiness commands. All administration and policy flows through the chain of command to the individual units. Mission requirements and training criteria are to be provided by NAVTELCOM.

The program has been placed in a status which authorizes its assigned enlisted personnel 48 paid drill days and its officers 24 paid drill days annually. Current regulations require 90 per cent satisfactory attendance for retention in the program. Additionally, the members of the program are authorized 14 days of ACDUTRA annually to be performed as an integral unit as feasible. When such training is not available, individual members are authorized to request training duty in a communications-related billet as an individual.

The Telecommunications Program has an authorized strength of 1,117 officers and enlisted personnel. The assigned

personnel are divided into 89 separate units which would mobilize in direct support of 11 NAVTELCOM commands and 13 other commands requiring telecommunications personnel augmentation during a full or partial mobilization.

The 89 units are subdivided into three functional groups according to their mobilization mission. The first group comprises 10 units and is known as the Mandatory Quota Group. This group which has an authorized strength of 20 officers and 160 enlisted are designated the primary recall groups. They would be the first and most important groups to be mobilized in that their function is to augment the DCS responsibility at designated COMMSTA's.

The second functional group comprises some 14 units and is known as the Base Support Group (Base Consolidated Telecommunications Activities (BCT)). This group has an authorized strength of 28 officers and 308 enlisted. The primary purpose for their existence is to mobilize and to augment telecommunications activities at major Fleet Commands in the event of a recall. Although not directly responsive to NAVTELCOM, these personnel will be employed at those major communications centers that interface with NAVTELCOM facilities and are therefore a vital link in the chain.

The third and last group consists of some 65 units which are known as the Operational Staff Group. The authorized allowance for this portion of the program is 130 officers and 987 enlisted personnel. The major function of the Operational Staff Group is to supplement the active manning of 13 NAVCOMMSTA's at the time of mobilization. The allowance of the

program and the individual groups contained herein are contained in Appendix A. The breakdown of the mobilization requirements as required by each functional group is contained in Appendix B. The individual commands that these 89 units will support is contained in Appendix C.

The allowances contained in Appendix B are taken from the requirements as stated by NAVTELCOM and the other supported commands Mobilization Manpower Allocation Requirement Plans (M-MARP). For the most part, these plans do not reflect the current requirements of the command but are based on the M-day plus requirements of the years past. As new equipment or new procedures were placed in operation, the corresponding personnel requirements for mobilization were not fully addressed; thus, when the mobilization requirements for this program were called, due consideration had not been given to the current situation [15]. Appendix D provides the billets upon which the allowance of the program is predicated. These billets show requirements for a large number of personnel to operate facilities in both a manual, torn tape and automated mode. In reviewing the actual requirements as submitted by a portion of the supported commands, there appears to be a large inconsistency in the billets initially authorized as opposed to those actually required [16]. The seriousness of this becomes apparent when it is realized that each individual assigned in a unit is in reality now assigned to a specific command and a job or billet within that command. During his time in the program he will theoretically be training toward

proficiency in that billet, hopefully on the equipment used in that job. Thus, if the individual is recalled and the skill he was trained for is different than the one for which he was recalled, he is in effect a wasted asset for a time.

Thus, what is needed is an on-going program which will establish individual billets within the Reserve units keyed to the active duty commands' actual requirements. From a pure numbers side of the program, it will work only if those who are to be served will give the proper attention to what their current requirements are and make them known.

V. TELECOMMUNICATION TRAINING

Prior to restructuring, the Reserve Program was built around an individual and his possible future use in the event of mobilization. All too often his affiliation in the program could be viewed as just a name to be kept on a list to be used for mobilization. He was given the opportunity to advance on the promotional ladder; it kept him happy; it kept him in the program. But, he did not have the opportunity to use or increase his skills to make him truly useful in the event of a recall. For a Radioman or Electronics Technician, how do you increase your skills if you have no radios, teletypes, radar or pubs on your two weeks of ACDUTRA? All too often, the situation was "I ain't going to let no damn reserve work on my gear. He'll screw it up. He don't know nothing." This response was probably very close to true and thus "he ain't going to learn nothing, ever."

> Like ACDUTRA, drill training is a keystone of mobilization readiness and should be constructed such that it would be profitable and enjoyable for the reservist. Without facilities and support to construct it as such, it is not. For many reservists, drill is viewed with indifference; and for too many reservists, it is viewed as the reason for leaving the Reserve Program. [13]

In restructuring the Naval Reserve, this basic fault was considered and attempts were made to correct this fundamental shortfall. Under the Total Force concept, the reserve unit became the fallback in the event of augmentation of the active force. As such, it was planned that each unit knew to which

command it was going by name, and each individual knew what his job was and what type of equipment he would be responsible to operate or repair. The unit itself was to become an integral part of the active duty command so that the individual and the unit could gear its training to that particular command's mission. But, here again, how do you train an individual without the facilities to train? For the most part, Reserve Centers are ill-equipped. The equipment there dates into the early 50's; to anyone's way of thinking, there have been a lot of technological changes since then. Thus, there are no real facilities to train on. The situation will probably not improve in the short run; CNO has stated:

> In the case of capabilities assigned predominantly to the Regular Force, new equipment is ordinarily not procured specifically for the Reserve Force. Instead, equipment typically migrates to the Reserve Force as a result of Regular Force modernization. This policy stems from the higher readiness demanded of the rotationally deployed Regular Force, which requires that it have the most technologically advanced capabilities. [11]

It is apparent, another way to increase training readiness must be found.

COMNAVTELCOM as sponsor of the Telecommunications Program has stated that the primary training emphasis for Reserve telecommunications units is to attain a level of operational and functional readiness attuned with NAVTELCOM standards. To accomplish this, it is important that units are familiar with and train on current operational communications assets [14]. The Communications Commander has envisioned that the majority of the Reserve personnel would be fully qualified

to maintain and operate any second generation communication facility. A second generation facility is one which uses low speed I/O terminals and manual processing. However, each unit should immediately work to become proficient in third generation facilities (High speed I/O terminals with automatic digital processing during transit through final distribution). For a unit to achieve these training standards can be difficult to say the least. The typical Reserve Center normally has no more than one low power transmitt receiver and possibly two teletypes. Usually, the only frequencies authorized are those in MARS band; thus, opportunity to attain a level of proficiency is severely limited.

This equipment shortfall has been realized, and COMNAVTELCOM has recommended that if a Naval Communication Activity is within a unit's local area, units should be trained and integrated into that activity's communication or electronics maintenance weekend watch schedule. As a minimum this should be done twice per year. For these purposes, NAVCOMMSTA SAN FRANCISCO, NAVCOMMSTA SAN DIEGO, NAVCOMMSTA NORFOLK, and NAVTELCOM NEWPORT have been made available. A review of the geographical locations of the 89 units contained in Figure 4 indicates that only four units are located within reasonable commuting distance* of a designated Naval communication facility.

COMNAVTELCOM has indicated that on ACDUTRA each reservist is expected to requalify in his assigned mobilization billet.

---

*100 miles without reimbursement from the government.

LOCATION OF NAVAL RESERVE TELECOMMUNICATIONS UNITS

. Reserve Units

Δ NAVCOMMSTA

*More than one unit present at some locations.

Figure 4. Location of Naval Reserve Telecommunications Units.

However, here again, there are factors which will limit any one unit or individual from accomplishing this. First, no ACDUTRA can be performed out of the Continental United States [17]. Thus, those units which have a mobilization to NAVCOMMSTA's OUTUS are precluded from training at those sites.

Thus, here lies the problem; on one hand, we have an operational commander, COMMNAVTELCOMM, stating a seemingly valid mobilization requirement. On the other, we have the reserve command attempting to meet that requirement, but the question is: can the requirement be met with the properly trained personnel in the present environment? To the credit of the program personnel, efforts are being made to utilize present personnel and equipment assets to provide some definitive training, but it is a hit or miss situation and does not address the question: total readiness for the entire program.

The answer appears to direct itself into two areas, the long run and the short run, and the overall response to each of these is overshadowed by another major influence, the operational commander, COMNAVTELCOMM. The program does not exist unto itself, for itself; it exists for the sole purpose of meeting the operational needs of COMNAVTELCOMM in time of crisis or national emergency. Thus, anything and everything that is done within and to the program should be done in response or with concurrence of COMNAVTELCOMM.

In a sense, this has been done; general training requirements and mission requirements have been laid on the reserve program. The Reserve Program has in turn attempted to

implement this through directives and funding. What has not been done is to define the mobilization requirements in terms of when an individual unit is required to be completely mission capable* after mobilization. With this information, training and basic program administration can be equated to the funds, equipment and time that must be expended to attain that level of mission readiness.

Thus, if COMNAVTELCOMM indicates that a particular unit is so assigned and includes such personnel that their function in mobilization billets are that they would not be required to perform at full efficiency until "X" number of days after arrival at the mobilization billet, then "Y" dollars need be expended on their training and existence in the Reserve Program. The function here is not linear, thus the more expended on a unit does not correspondingly decrease its mission capable time in direct proportion. What then is the amount that need be expended on an individual unit? This must come from the operational commander who has the mission requirements. There are, of course, constraints on what should be expended in attaining a level of mission readiness and that is roughly a factor of five, or the amount dedicated to training any one individual should be less than five times the amount he is being paid. Above this, it would be more cost effective to replace the reserve with a regular (See Figure 5).

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*Mission capable time refers to the time required after reporting to a mobilization billet until a unit or individual is considered qualified in all respects to perform in that billet.

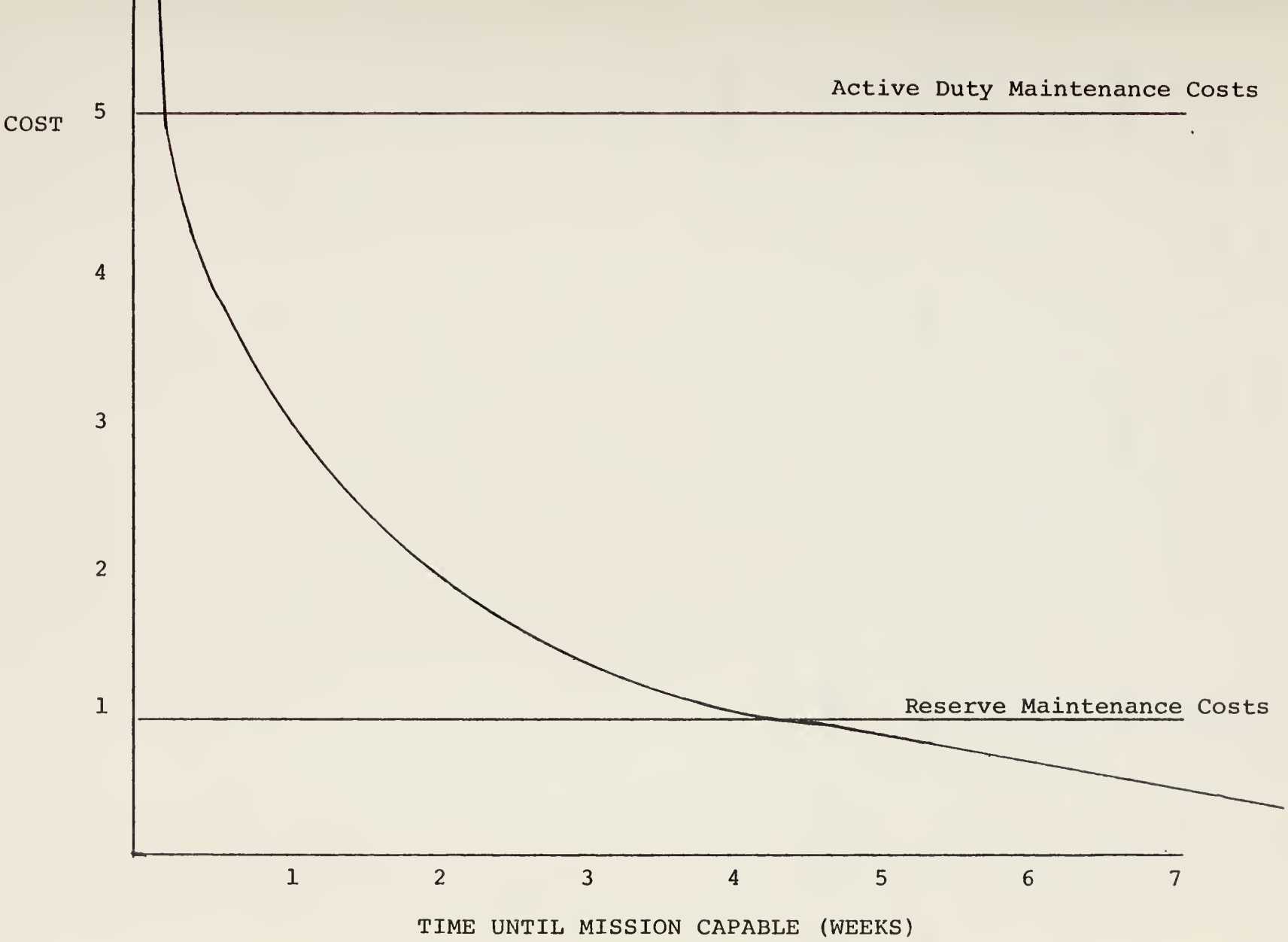

Figure 5. TIME MISSION CAPABLE VS. COST.

In looking at both a solution for providing training in the long and short run, any one answer that is offered must be consistent with the time that the unit is required to be fully mission capable within the command. COMNAVTELCOMM should review his requirements and restate them in terms of the degree of readiness the particular unit needs to mobilize.

With this in mind the answer to what type of training and what facilities and funds are required can be addressed. The problem as stated before lies in two directions - the long run and the short run. The reason for this is that in the long run considerable facilities and equipments required need to be funded and the time for the budget cycle does not allow consideration in the near future.

VI. THE SHORT RUN ALTERNATIVES

Training in the short run then is strictly limited to facilities on board or programmed and to funds identified in the budget. The type and pattern of training is then based on the cost of the training in relation to the degree of readiness required. From the low end there is the training that is conducted within the unit's own training center coupled with two weeks of ACDUTRA. Here the training would necessarily center on classroom instruction, correspondence courses and preparation for inspections and ACDUTRA. The cost for this training is minimal and the time until this unit would be mission capable after mobilization would be maximum. The other end would cost the most and provide the least time until the unit was mission capable after mobilization. This would involve one weekend away for training at a NAVCOMMSTA once each quarter and two weeks of ACDUTRA. The difference between the two approaches can be calculated in terms of dollars; in terms of differences in times than the unit is mission capable can only be estimated. Generally, an individual takes about five weeks to become proficient in a new job; under the concept of utilizing an individual once a quarter, this time can be reduced. It can be reduced by the fact that it is never more than two months since he last performed the same functions while, on the other hand, the longest a person could have been away from a similar function is twelve months. In the former case, the learning curve is

reenforced at much smaller intervals than the latter [18]. It is estimated that it could be nearly cut in half; but it would cost more money. The question then is if the people are really necessary and if their mission capable time is of value, where do the funds come from? If they are not available from within the command, can they come from elsewhere? The operational commander certainly has an interest in the situation; should he demand the additional funds be provided since he is the requirer and he, not the reserve, reaps the benefit of the mobilized individuals. The budget formulation process for the program should be structured so that the full program cost can be assessed in respect to the mission that must be accomplished. In other words, the requirements must be determined before the amount of funds needed are budgeted and not the reverse. Since COMNAVTELCOMM should determine the degree of mission capable time required for the reservists that support him, he too should have a direct say in what trade-offs between equipment and personnel costs should be allocated to the program. Certainly, even in a pure training status, the individuals can be of material benefit to COMNAVTELCOMM's operation. If scheduled and rotated properly between the three NAVCOMMSTA's Norfolk, San Diego and San Francisco, the telecommunication program could provide approximately four officers and eighteen enlisted each weekend of the year. Additionally, the ACDUTRA could be scheduled so that one reserve unit was at each of the three communications stations continuously throughout the year. This would, in effect,

provide an increase in a station's allowance of some 20 personnel. If, due to this contribution, the station's active duty allowance could be reduced, the overall costs savings would be on a five to one basis which could be posted against the increased cost of implementing such a program.

Another course of action could be to change the drilling status of the program from Category A to B. This would reduce the overall drilling time from 48 to 24 paid drills per year. This action would be undertaken with the understanding that the overall costs savings realized would be applied to financing a more viable training program. The rationale behind such a move is based on the fact that attempting to train in a classroom without equipment or facilities is counterproductive [19]. Thus, why waste a weekend doing nothing, if the savings realized from not scheduling that weekend could be applied toward transportation and berthing some other weekend. In a Category B status, 24 weekends would be available per year. Of these, sixteen would be scheduled as a week away training (WAT) at a NAVCOMMSTA; the remaining eight drills would be scheduled as single drills in the month that WAT was not scheduled. This would cover for inspections, administration and preparation for weekend away training (See Figure 6). What has been done in effect is to limit drilling to meaningful and productive times and sites at one-half the present direct personnel costs.

Department of Defense has calculated the cost of a reservist in Category A at $3400 per year. They also figure the average cost of a Category B reservist at $2100 or a net

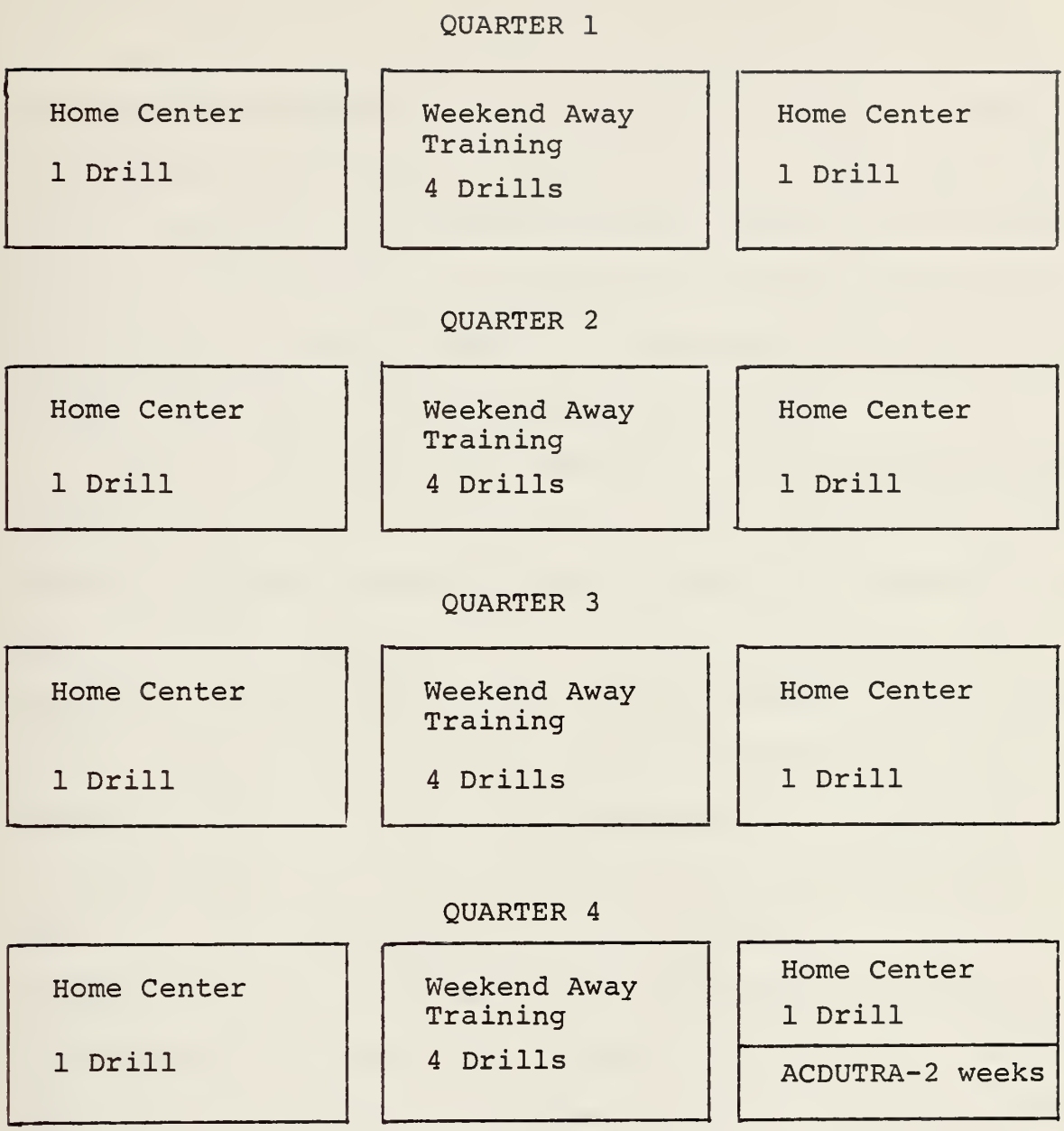

Figure 6. Typical Drill Schedule.

difference of $1300 per reservist for training cost [20]. The average distance from any one telecommunications unit to the nearest NAVCOMMSTA is approximately 730 miles. Figuring the average airfare to be .10 per air mile or less, the cost of four weekends away training sessions ($584) is well below the initial net savings. The additional funds could be applied to messing and berthing costs, if necessary, or to enhancement of the facilities of the home training center.

Just as the operational commander has an interest in who and how the reserve personnel in the telecommunications program are being trained, he should have an interest in measuring the state of their readiness. As it is now structured, this function normally falls to the reserve command on the district level. The present operational state of readiness is normally determined as part of the annual administrative inspection of a reserve unit. It would certainly seem more prudent and more of a valid indicator of a unit's readiness if such an evaluation could be made on-site where meaningful training is conducted and operational equipment is available. COMNAVTELCOMM should assume the responsibility for evaluating operational readiness of individual units; he should be the one who requires the program or an individual unit to emphasize or de-emphasize certain types of training as a result of what he has learned through observation of the units in inspection. He is the reason that the units exist; thus, he should have a say in what is happening.

VII. THE LONG RUN ALTERNATIVES

In the long run, the area in which planning for a permanent solution and a corresponding permanent equipment suite might be required should be dealt with now. COMNAVTELCOMM has stated that all units should work toward proficiency in third generation communication switching and message processing systems. These systems include NAVCOMPARS, LDMX, satellite systems and others yet to be activated. Planners must analyze these systems and their operation with the idea that a portion of their being will or will not be dependent on the existence of Naval Reserve personnel to man them. If it is seen that Naval Reserve personnel are required, then this factor must be taken into account in figuring the implementation and operational cost of the system. It should not be set aside as an inconsequential item.

In this regard, the things to be included in any such life cycle cost analysis will become a function of the commander's requirements as to when reserve personnel or units are to be considered mission capable on any particular system. Thus, if personnel are to be phased in over a period of time and trained on station on a particular system, then the cost to the system and the expenditure on training reserves is minimal. Conversely, if the reserve personnel are to be considered to be replacements for active duty personnel transferred to duty with front line combatants, then the cost to the system and the expenditure by the reserve program would necessarily be maximum [21].

Therefore, the planning for any long range training program for the reserve telecommunication program must initially be based on these two criteria:

1) What is it that the reserve personnel are training for. What elements of what system are earmarked for operation by the reserves.
2) What response time is required of individual units once mobilization has been ordered.

Once these have been established, the associated allowable costs and amount of training required can be determined to form cost parameters. Then, the format of a training program can be established. The format of programs should address the total life cycle costs associated with it. That is on a continuing basis over a certain number of years, costs, limited by the criteria previously established, would include research and development cost, initial investment and continuing maintenance and operation cost [22]. This life cycle cost should be developed for any alternative program considered. The final selection of a format for training would be the least costly still remaining within the established parameters.

To develop some training format within this discussion would not be possible, for as discussed before, the criteria upon which it would be based is not known. It must be developed by the operational commander to whom the program must be responsive. All that can be done here is to look at alternatives and highlight what the relative cost of one to

the other would be in relation to what degree of mission responsiveness might be expected.

Weekend away training provides the best operational training, since it is conducted in a real-world operational situation. Performance on any single task or even a multitude of related tasks could be expected to improve markedly as the skills and job knowledge were reenforced over the year. This is based on a four drill weekend once per quarter and two weeks of ACDUTRA per year. The question of additional drills, other than the eight remaining under a Category B status, would be one of determining if any additional drills would provide the productive training to offset the additional costs. The cost of such a training format would be relatively stable throughout its period of employment and would consist of the basic personnel cost of maintaining individuals in the unit plus the transportation, messing and berthing costs at the training sites. The overall cost would be reduced by any active duty personnel savings that could be realized as a result of continuous employment of reserve personnel.

Upgrading the facilities at various training centers serving telecommunications units is another possible alternative in establishing a training program. This would entail establishing a minimum equipment suite to standardize the facilities at each of the 89 centers. The cost of implementing such a course of action would involve a minimum amount of design cost since most equipment would be off the shelf. The investment and installation, especially site preparation

costs, would be considerable. The continued operation and maintenance costs of the suite would be minimal. The problem with implementing this particular course of action is that the equipment suite that would of necessity be selected could not adequately provide the requisite training to the telecommunications units. The equipment suite, due to lack of personnel and sheer economic constraints, would be limited to a communications operation found in a smaller ship's radio shack. The equipment and the functions that are required in a NAVCOMMSTA environment could not be simulated in such a suite. Therefore, although some communications-related training could be performed, its relative impact on unit readiness to assume duties in mobilization billets at NAVCOMMSTA's would be minimal. One other factor which does not modify the effectiveness of the suite as a training device but does effect the overall suite's cost factor is that such a suite's overall cost could be shared by other programs which have a responsibility for training telecommunication rates.

Mobile vans configured to simulate portions of a NAVCOMMSTA's operation is another possible alternative. Under this training format an equipment suite would be configured to provide training in certain functions of a NAVCOMMSTA's operation. The design and testing cost of such a suite would be high. First, the function that would be simulated would have to be broken out and analyzed. This would have to be fitted to equipment capable of handling such a function. In most cases, existing equipment would have to be redesigned to accommodate such a small and restricted requirement.

Additionally, equipment such as a micro-computer and associated software would be required to generate scenarios through the system since it would most likely be off-line. The investment and installation cost would be high. The operation and maintenance cost of the system would be moderate for each van in operation. The effectiveness of the van concept as a training format would be based primarily on how well the equipment suite was designed to simulate the functions of a COMMSTA and on the frequency that a unit had access to the van for training purposes. Some of the problems associated with this type format are in determining the number of vans required and how they are to be operated and moved. If active duty personnel are to maintain them and provide the logistics for them, then a new and more expensive cost is added to the system. Overall the van would, if designed properly, provide some training to improve mission capable time after mobilization, but it would be a function of the success of the simulation and the frequency of the unit's access to the van.

The ship operational trainers (SOT) to be placed at major reserve centers is to contain a small communications suite; if this suite was considerably upgraded to provide a major message processing and switching function, it could serve both as a training vehicle for the telecommunications unit and as administrative tactical network between readiness centers. To implement such a format would entail considerable design and testing costs. It would be, in a sense, a mini-communications network within the reserve community. It

could be designed to emulate the operation of the naval communications system; as such, each or some of the readiness centers would interconnect with one another through leased lines connected to switches and terminals at designated readiness centers. The system could be used for inter-center operations, exercises and administration. The operation of the system would fall upon the reserve telecommunications community. The investment and installation costs would be very high. However, the continued maintenance and operation of the system would be relatively low. Depending on the design of such a system the training value in respect to reduced time until mission capable after mobilization could be high. The design and initial investment cost of such a format almost preclude this from consideration unless it could be integrated as a component requirement of most of the other reserve programs. In this manner the systems cost is apportioned over a number of sponsors. Additional cost consideration to be taken into account with this system are those logistic costs associated with having units drill at the readiness center vice their home centers.

In summary, the alternatives that have been discussed and the relative cost of each is based on a qualitative assessment of the funds required to design, construct and activate each of the facilities. As the training is now generally conducted, in the classroom, the cost is low; but so also is the readiness of the individual or the unit to step into a billet and perform at full efficiency. As the

degree of readiness is increased, or the mission capable time reduced, the cost generally rises. The rise in the cost appears to be a function of the amount of equipment required by each alternative and the relative complexity of designing a system to simulate the functions performed in the operational environment. This premise is true until the alternative of WAT is considered. Here since the format of training does not involve equipment procurement but only transportation costs, which would be considerably less, the cost in relation to degree of readiness would be a relatively low cost resulting in a high degree of readiness. Figure 7 graphically displays the relative cost versus the degree of readiness attained by implementing any one of the training formats.

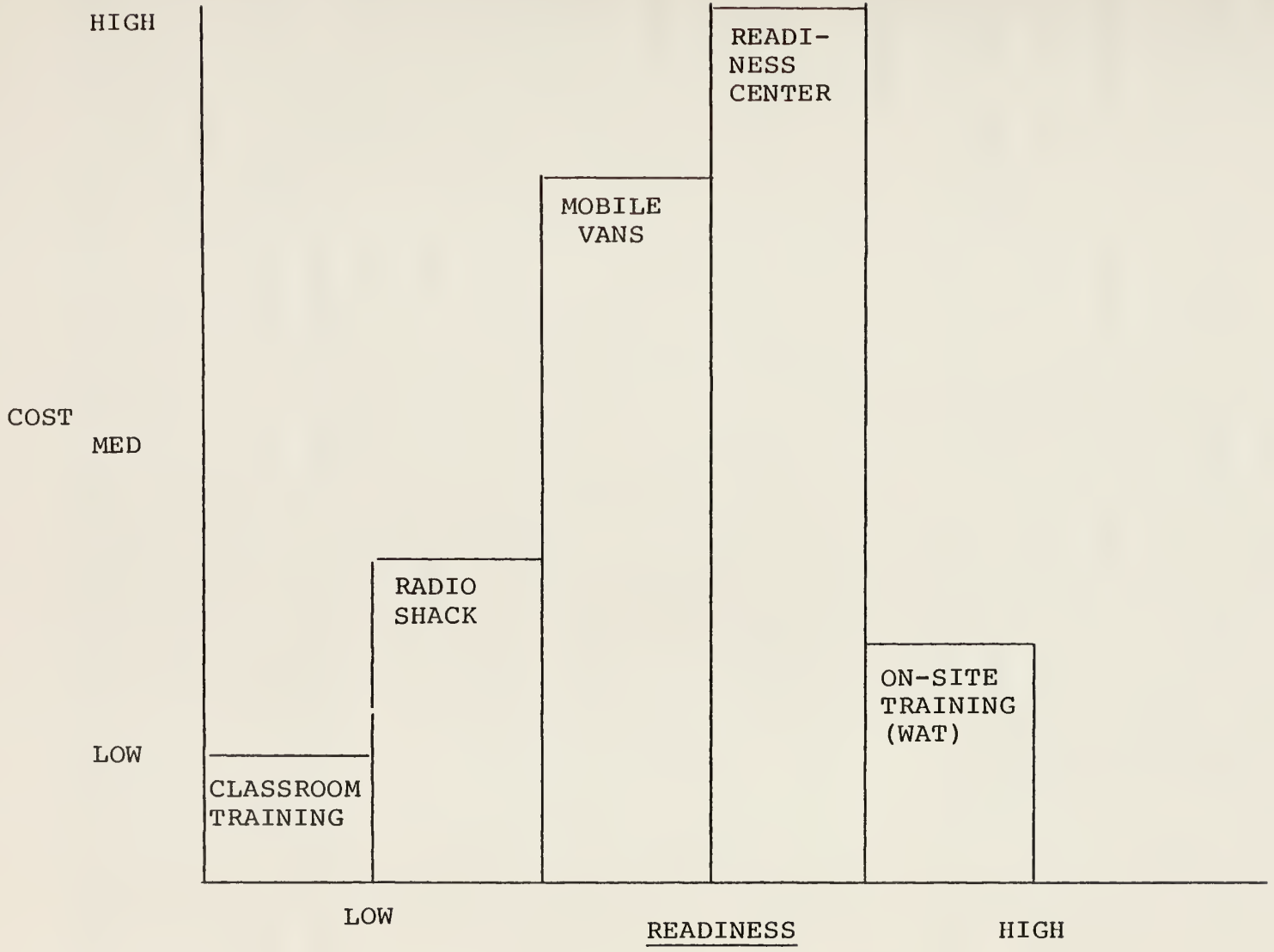

Figure 7. Degree of Readiness vs. Cost for Various Training Formats.

VIII. CONCLUSIONS AND RECOMMENDATIONS

The Naval Reserve has long been hampered in its effectiveness by mismanagement and the "they vs. we" attitude with the Regular Force. Due to the decision to fall back to the reserves as the primary augmenting force in time of crisis, a restructuring of the Reserve Force was ordered. The restructuring followed sound management principles and for the first time appeared to really approach the needs of the operational commanders. As a part of this restructuring, the Telecommunications Program was established to support COMNAVTELCOMM.

Due to the very nature of the billets required under this program, the reserve personnel assigned to fill those billets must be proficient and competent in the latest communications technology. Thus, there is a real need to first ensure that the mobilization requirements are stated correctly in both quantity and quality. Once done, the facilities, opportunities and funds must be made available so that the individual reservist as part of an integral unit can attain a "mission capable" status.

As the Telecommunications Program exists for the requirements of COMNAVTELCOMM, he must take an active role in monitoring the operation of the program if he is to have access to the quality of personnel he requires for mobilization. He must not only monitor the reserve side but must also insure

that his subordinates at the active duty commands are stating their mobilization needs correctly both in quantity and quality.

As a first step in ensuring that the reserve program will provide the units the training that he requires, an analysis of what degree of readiness is required of the various units should be undertaken. From this analysis the operational commander and the reserve commander can determine at what cost this degree of readiness will come. Planning can then take place on a long range basis to fund and implement some format of training that will meet the requirements. As a continuing step, COMNAVTELCOMM should involve himself in the inspection cycle of the reserve telecommunications unit, for it is only through this function that he can adequately determine if the training being conducted is providing the degree of readiness that he needs to accomplish his mission.

In a more urgent sense, training in the short run must be improved. There is a very real danger in losing people in the program unless meaningful training is provided. With the massive restructuring that has recently taken place together with all the uncertainties about billets and the direction that programs would take, morale among troops is low. This fact, along with the almost total lack of facilities, can drive people out of the program and out of the reserve altogether. If funds for equipment or weekend away training is not available, then the amount of training should be reduced to such a point where some productive and meaningful training

could be done through the savings realized in the reduced drill schedule.

We only get out what we put in.

APPENDIX A

TELECOMMUNICATIONS PROGRAM
a sub-program of

PROGRAM 11--SPECIAL AND GENERAL SUPPORT PROGRAM

RESERVE UNIT ORGANIZATION MANNING

FUNCTIONAL CATEGORY	TYPE UNIT	NO UNIT	UNIT DESIGNATION	UNIT ALLOW OFF/ENL	TOTAL ALLOW OFF/ENL
MANDATORY QUOTA GROUP	ORU	10	NAVCOMSTA (DCS)	2/16	20/160 180
BASE SUPPORT GROUP	ORU	14	BCT	2/22	28/308 336
OPERA-TIONAL STAFF GROUP	ORU	3	NAVCOMSTA	2/19	6/57
	ORU	62 65	NAVCOMSTA	2/15	124/930 130/987 1117

APPENDIX B

TELECOMMUNICATIONS PROGRAM
a sub-program of

PROGRAM 11--SPECIAL AND GENERAL SUPPORT PROGRAM

NAVCOMSTA (DCS) ORU

OFFICER ALLOWANCE

DESIGNATOR	GRADE	ALLOWANCE
110X	LCDR	1
6570	LT	1
TOTAL		2

ENLISTED ALLOWANCE

RATING	E-4	E-5	E-6	E-7	E-8	E-9	TOTAL
RM	2	3	2	1			8
ET			2				2
ETN	3	2					5
YN			1				1
TOTAL	5	5	5	1			16

BCT 22 ORU

OFFICER ALLOWANCE

DESIGNATOR	GRADE	ALLOWANCE
110X	LCDR	1
6570	LT	1
TOTAL		2

ENLISTED ALLOWANCE

RATING	E-4	E-5	E-6	E-7	E-8	E-9	TOTAL
RM	9	4	2	1			16
ET			1				1
ETN	2	2					4
YN		1					1
TOTAL	11	7	3	1			22

NAVCOMMSTA ORU

OFFICER ALLOWANCE

DESIGNATOR	GRADE	ALLOWANCE
110X	LCDR	1
6570		1
TOTAL		2

ENLISTED ALLOWANCE

RATING	E-4	E-5	E-6	E-7	E-8	E-9	TOTAL
RM	3	3	2	1			9
ETN	3	3	2	1			9
YN		1					1
TOTAL	6	7	4	2			19

APPENDIX C

Mandatory Quota Group

NAVCOMMSTA GUAM
NAVCOMMSTA MORROC
NAVCOMMSTA PHILI
NAVCOMMSTA HONO
NAVCOMMSTA ITALY

Base Support Group

OPNAV
CINCPACFLT
CINCLANTFLT
CINCUSNAVEUR
NORTH ISLAND
NEW ORLEANS
(7 others not identified)

Operational Staff Group

NAVCOMMSTA JAPAN
NAVCOMMSTA SAN FRANCISCO
NAVCOMMSTA SAN DIEGO
NAVCOMMSTA WASHINGTON
NAVCOMMSTA NORFOLK
NAVCOMMSTA ICELAND
NAVCOMMSTA LONDONDERRY
NAVCOMMSTA SPAIN
NAVCOMMSTA GREECE
NAVCOMMSTA HAROLD HOLT
NAVCOMMSTA BALBOA
NAVCOMMSTA ASMARA
NAVCOMMSTA ADAKA

APPENDIX D

CURRENT NAVAL ENLISTED CLASSIFICATIONS (NEC) REQUIRED DURING MOBILIZATION TO SUPPORT NAVTELCOM

NEC	DESCRIPTION
ET-1403	AN/FRT/83/84/85 Technician
ET-1404	TROPO-SCATTER Technician
ET-1405	AN/FRT-39, AN/URT-19, AN/URA-30 Technician
ET-1406	AN/FRR-60, CU 138Z/UR Technician
ET-1407	AN/FTA-15, AN/FGC-69 Technician
ET-1408	AN/FRC-84, AN/FCC-17 Technician
ET-1409	AN/FGC-73, AN/UGR-14 Repairman
ET-1411	Digital Subscriber Terminal Equipment
	MAINTENANCE TECHNICIAN
ET-1412	Special Fixed Communication Maintenance Technician
ET-1416	Shore Receivers Facility Maintenance Technician
ET-1432	KW-37T Technician
ET-1433	Steamvalve Technician
ET-1434	KG-13 Technician
ET-1435	KW-37R, KW-7 Technician
ET-1436	KG-14, KW-37R Technician
ET-1438	KW-7 Technician
ET-1441	KW-26 Technician
ET-1448	KY-3 Technician
ET-1449	NBST Equipment Technician
ET-1598	Electronic Standards Specialist
RM-2304	Intermediate Radio Operator (CW)
RM-2305	DCS Satellite Communication Terminal
	OPERATOR, AN/MSC-46 &/OT AN/TCS-S4
RM-2313	Communications System Manager
RM-2314	Cryptographic Machines Repairman (AN/SGA-3)
RM-2318	Communication System Technical Operator
RM-2319	Communication System Technical Supervisor
RM-2342	Teletype Repairman
RM-2346	Low-Level Keying Teletype Repairman
RM-2393	Special Fixed Communication System Operator

BILLET TITLES FOR NON-DESIGNATED (WITHOUT SPECIFIED NEC)

RADIOMAN (RM)

E7/8/9
CPOIC
ASST COMM WATCH OFFICER
BCST - FLTAC RELAY CENTER CPO
TRAFFIC CHIEF
WATCH SUPERVISOR
E-6
WATCH OPERATOR - TRAFFIC
OFF-LINE CRYPTO POIC
FREQUENCY MANAGER
FINAL TRAFFIC CHECKER
TOP SECRET PO
BROADCAST AREA SUPERVISOR
WATCH SUPERVISOR/ASSISTANT
FLTSAT COM SIGNAL MONITOR CONTROL
FLEET LOG MILITARY SUPERVISOR
CW WATCH SUPERVISOR
E-5
TRANSMITTER OPERATOR
BROADCAST SUPERVISOR
FLEET LOCATOR SUPERVISOR
QUALITY MONITOR
NARC SUPERVISOR
DURATTS SUPERVISOR
WATCH ROUTER
WATCH TRAFFIC CHECKER
SERVICE CLERK
OUT ROUTER
FLEET FLASH NET OPERATOR
MESSAGE ROUTER
M/C POINT-TO-POINT OPERATOR
CRYPTO OPERATOR
RECEIVER TUNER
CRYPTOGRAPHER
REPRODUCTION/DISTRIBUTION SUPERVISOR
FLEET LOCATOR
E-4
DIGITAL SUBSCRIBER TERMINAL EQUIPMENT (DSTE) SEND OPERATOR
PEAK LOADER
FLEET CIRCUIT OPERATOR
TRANSMITTER OPERATOR
BROADCAST TRAFFIC CHECKER
BROADCAST GRID CHECKER
BROADCAST SEND OPERATOR
BROADCAST CSUB OPERATOR

SERVICE CLERK
Z D K SCREENER
Z D K CLERK
MULTIPLE ADDRESS PROCESSING UNIT (MAPU) OPERATOR
MULTI-CHANNEL OPERATOR
COMMERCIAL TRAFFIC CLERK
OFF-LINE CRYPTO OPERATOR
DCS COORDINATOR
ROUTER SEND/RECEIVE OPERATOR
M/C BROADCAST OPERATOR
FULL PERIOD SHIP/SHORE OPERATOR
COMMUNICATION SECURITY EQUIPMENT (CSE) OPERATOR
AUTODIN OPERATOR
TELETYPIST
TAPE CUTTER
DELIVERY CLERK
RCA 301 OPERATOR
OUT LOGGER
CW OPERATOR
MESSAGE REPRODUCTION
MESSAGE COLLECTION/DISTRIBUTION
SPECIAL CATEGORY TOP SECRET CLERK
TACSAT OPERATOR
E-3
CARD/TAPE PREPARATION OPERATOR
FLEET CIRCUIT OPERATOR
AM/SSB OPERATOR
AM/SSB OPERATION FILE CLERK
PRIMARY SHIP/SHORE OPERATOR
NORATS OPERATOR
TRANSMITTER OPERATOR
FILE CLERK
FLEET LOCATOR
SINGLE CHANNEL OPERATOR
TTY OPERATOR
CW BROADCAST OPERATOR
NARC OPERATOR
FULL PERIOD SHIP/SHORE OPERATOR
SERVICE CLERK
M/C SHIP/SHORE OPERATOR
SEND/RECEIVE OPERATOR
AUTODIN OPERATOR
TAPE CUTTER
BROADCAST FIX-TAPE RECAP CLERK
RECEIVER CLERK
MESSAGE COURIER/DELIVERY
INCOMING MESSAGE LOGGER
CW CIRCUIT OPERATOR

CURRENT LDMX/NAVCOMPARS RM BILLET REQUIREMENTS

BILLET TITLE	RECOMMENDED RATE	NEC
Comm EDP Center Supervisor	RMCM/RMCS	RM-2313
Computer Operator	RM2/RM3	None
Internal Router (Inrouter)	RM1/RM2	None
Router	RM1/RM2	None
OCR Operator	RM3/RMSN	None
Service Center Supervisor	RM1	None
Service Clerk	RM2/RM3	None
Editor	RM1	None
Fleet Center Command VDT Operator	RM2	None

APPENDIX E

UNIT DESIGNATION		LOCATION	MILES TO COMMSTA	
NAVCOMSTA (DCS)	101	MANCHESTER, NH	572	NORFOLK
NAVCOMSTA (DCS)	206	ADELPHI, MD	192	NORFOLK
NAVCOMSTA (DCS)	308	RIVIERA BEACH, FL	831	NORFOLK
NAVCOMSTA (DCS)	410	AUSTIN, TX	1319	SAN DIEGO
NAVCOMSTA (DCS)	509	MONROE, LA	1058	NORFOLK
NAVCOMSTA (DCS)	612	CAPE GIRARDEAU, MO	1180	NORFOLK
NAVCOMSTA (DCS)	717	LINCOLN, NE	1325	NORFOLK
NAVCOMSTA (DCS)	814	INDIANAPOLIS, IN	706	NORFOLK
NAVCOMSTA (DCS)	918	CHEYENNE, WY	1154	SAN FRANCISCO
NAVCOMSTA (DCS)	1022	SPOKANE, WA	875	SAN FRANCISCO
BCT	102	FT. SCHUYLER, NY	350	NORFOLK
BCT	203	ALBANY, NY	475	NORFOLK
BCT	304	READING, PA	296	NORFOLK
BCT	406	ROANOKE, VA	243	NORFOLK
BCT	507	CHARLESTON, SC	403	NORFOLK
BCT	607	GREENVILLE, SC	407	NORFOLK
BCT	708	JACKSONVILLE, FL	640	NORFOLK
BCT	811	OKLAHOMA CITY, OK	1342	NORFOLK
BCT	914	GRAND RAPIDS, MI	768	NORFOLK
BCT	1016	TWIN CITIES, MN	1228	NORFOLK
BCT	1120	SAN FRAN, CA (TI)	86	SAN FRANCISCO
BCT	1220	SACRAMENTO, CA	53	SAN FRANCISCO
BCT	1322	GREAT FALLS, MT	1118	SAN FRANCISCO
BCT	1422	EUGENE, OR	528	SAN FRANCISCO
NAVCOMSTA	116	CEDAR RAPIDS, IA	1200	NORFOLK
NAVCOMSTA	216	WATERLOO, IA	1101	NORFOLK
NAVCOMSTA	317	WICHITA, KS	1365	NORFOLK
NAVCOMSTA	1001	BOSTON, MA	546	NORFOLK
NAVCOMSTA	1101	PROVIDENCE, RI	511	NORFOLK
NAVCOMSTA	1202	FT. SCHUYLER, NY	350	NORFOLK
NAVCOMSTA	1303	ERIE, PA	507	NORFOLK
NAVCOMSTA	1403	ALBANY, NY	475	NORFOLK
NAVCOMSTA	1503	SYRACUSE, NY	515	NORFOLK
NAVCOMSTA	1604	FOLSOM, PA	265	NORFOLK
NAVCOMSTA	1704	HARRISBURG, PA	303	NORFOLK
NAVCOMSTA	1801	SPRINGFIELD, MA	469	NORFOLK
NAVCOMSTA	1905	AKRON, OH	490	NORFOLK
NAVCOMSTA	2005	CLEVELAND, OH	519	NORFOLK
NAVCOMSTA	2105	PITTSBURGH, PA	395	NORFOLK
NAVCOMSTA	2205	DAYTON, OH	603	NORFOLK
NAVCOMSTA	2305	MC KEESPORT, PA	410	NORFOLK
NAVCOMSTA	2406	ALEXANDRIA, VA	187	NORFOLK
NAVCOMSTA	2523	KNOXVILLE, TN	500	NORFOLK
NAVCOMSTA	2607	GREENSBORO, NC	230	NORFOLK
NAVCOMSTA	2707	CHARLOTTE, NC	312	NORFOLK
NAVCOMSTA	2807	RALEIGH, NC	169	NORFOLK
NAVCOMSTA	2908	TAMPA, FL	831	NORFOLK
NAVCOMSTA	3008	ST. PETERSBURG, FL	900	NORFOLK

NAVCOMSTA	3108	WINTERHAVEN, FL	900	NORFOLK
NAVCOMSTA	3208	ATLANTA, GA	550	NORFOLK
NAVCOMSTA	3309	NEW ORLEANS, LA	1036	NORFOLK
NAVCOMSTA	3411	LUBBOCK, TX	1044	SAN DIEGO
NAVCOMSTA	3523	TUSCALOOSA, AL	740	NORFOLK
NAVCOMSTA	3623	HUNTSVILLE, AL	703	NORFOLK
NAVCOMSTA	3709	SHREVEPORT, LA	1150	NORFOLK
NAVCOMSTA	3809	LITTLE ROCK, AR	1017	NORFOLK
NAVCOMSTA	3910	HOUSTON, TX	1481	SAN DIEGO
NAVCOMSTA	4010	HOUSTON, TX	1481	SAN DIEGO
NAVCOMSTA	4110	SAN ANTONIO, TX	1385	SAN DIEGO
NAVCOMSTA	4211	WACO, TX	1349	SAN DIEGO
NAVCOMSTA	4311	DALLAS, TX	1338	SAN DIEGO
NAVCOMSTA	4411	EL PASO, TX	734	SAN DIEGO
NAVCOMSTA	4516	GREEN BAY, WI	1025	NORFOLK
NAVCOMSTA	4614	FT. WAYNE, IN	681	NORFOLK
NAVCOMSTA	4714	CADILLAC, MI	900	NORFOLK
NAVCOMSTA	4806	HUNTINGTON, WV	454	NORFOLK
NAVCOMSTA	4906	S. CHARLESTON, WV	400	NORFOLK
NAVCOMSTA	5015	MANSFIELD, OH	535	NORFOLK
NAVCOMSTA	5115	COLUMBUS, OH	545	NORFOLK
NAVCOMSTA	5215	COLUMBUS, OH	545	NORFOLK
NAVCOMSTA	5313	CINCINNATI, OH	600	NORFOLK
NAVCOMSTA	5416	SIOUX FALLS, SD	1377	NORFOLK
NAVCOMSTA	5516	FARGO, ND	1462	NORFOLK
NAVCOMSTA	5616	DULUTH, MN	1130	NORFOLK
NAVCOMSTA	5716	LA CROSSE, WI	1104	NORFOLK
NAVCOMSTA	5817	KANSAS CITY, MO	1181	NORFOLK
NAVCOMSTA	5917	OMAHA, NE	1278	NORFOLK
NAVCOMSTA	6017	SPRINGFIELD, MO	1110	NORFOLK
NAVCOMSTA	6116	DES MOINES, IA	1140	NORFOLK
NAVCOMSTA	6220	SALT LAKE CITY, UT	700	SAN FRANCISCO
NAVCOMSTA	6318	DENVER, CO	1125	SAN DIEGO
NAVCOMSTA	6418	DENVER, CO	1125	SAN DIEGO
NAVCOMSTA	6511	ALBUQUERQUE, NM	800	SAN DIEGO
NAVCOMSTA	6619	ENCINO, CA	160	SAN DIEGO
NAVCOMSTA	6719	POMONA, CA	109	SAN DIEGO
NAVCOMSTA	6819	LONG BEACH, CA	104	SAN DIEGO
NAVCOMSTA	6922	PASCO, WA	1165	SAN DIEGO
NAVCOMSTA	7021	PHOENIX, AZ	357	SAN DIEGO
NAVCOMSTA	7122	BILLINGS, MT	1160	SAN FRANCISCO

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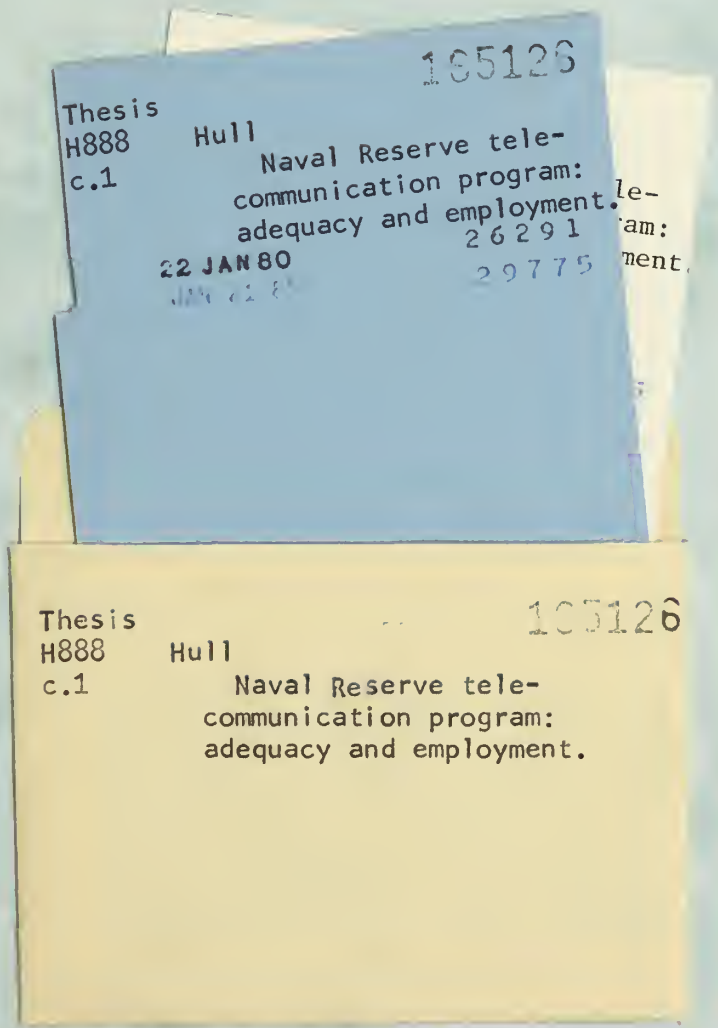
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